GARD®

GAMMA ATOMIC RADIATION DETECTOR

SR SARGENT-RAYMENT CO.
nuclear and electronic devices

4926 East 12th Street, Oakland 1, California

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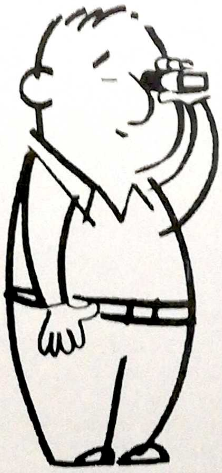


GARD: WHAT IT IS

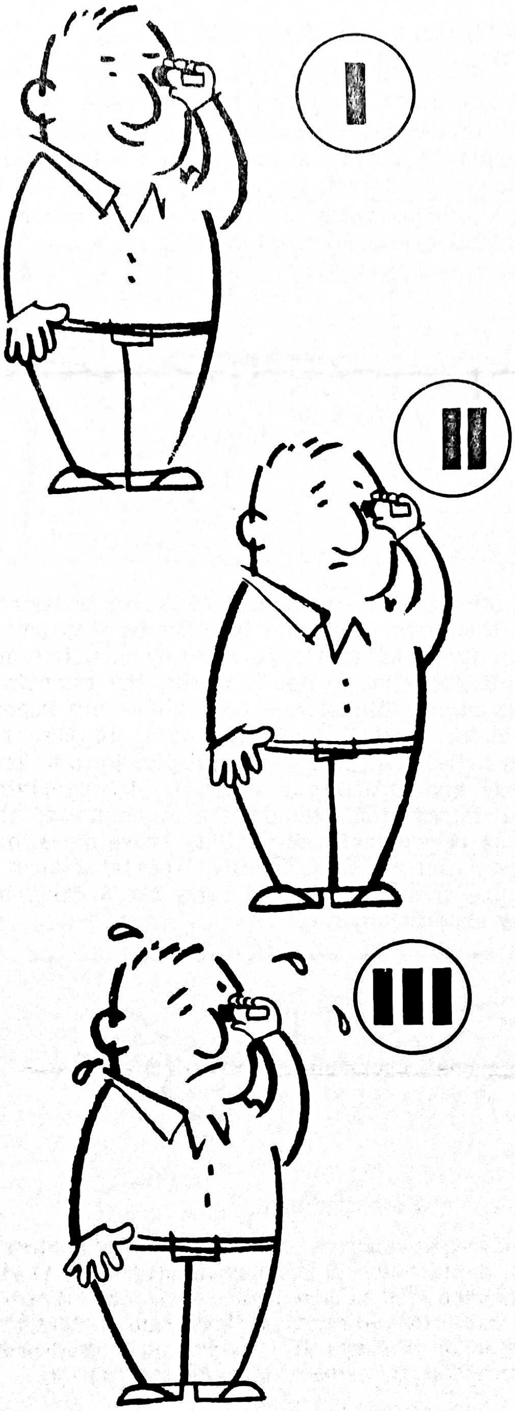
INEXPENSIVE GAMMA RAY DETECTOR

GARD is a simple, inexpensive radiation detector—not a dosimeter. (It indicates the immediate presence of radiation instead of later measuring how much has been accumulated). GARD was designed to be used by the individual citizen as well as military and Civil Defense personnel. GARD tells whether it is safe to remain in an area which has been exposed to radioactivity resulting from an atomic explosion, radiological warfare or accidental contamination.

With GARD you can quickly detect the presence of harmful radiation. GARD is always ready for immediate use and guarantees optimum performance because its parts will not deteriorate. Light in weight, small in size, GARD fits easily in pocket, purse, car glove compartment or first-aid kit.

GARD: HOW IT WORKS

GARD is read by holding it tightly to the eye. There are no complicated dials to interpret. You will see one, two or three rectangles that indicate as follows:



"ONE" IS SAFE

You will always see one illuminated rectangle. This middle rectangle is of luminous material and acts as your comparison standard. The middle rectangle, by itself, indicates that the area in which you are standing is safe.

"TWO" MEANS CAUTION

Should you see two rectangles, you know that you are in a radioactive field of medium intensity. The tolerable exposure here would range from 3 to 10 hours. For a general rule, about 3 hours could be allowed. But it is recommended that you search your immediate surroundings for an area where only one rectangle is visible.

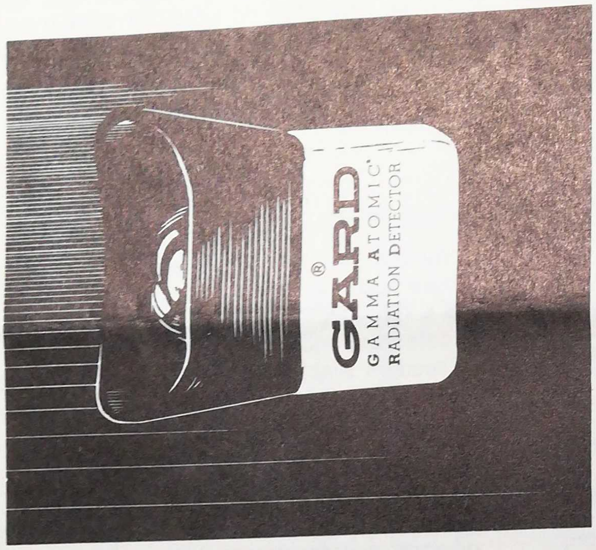
"THREE" FOR DANGER

If you see three rectangles, it is essential that you move as soon as possible to an area where only two or, better yet, one rectangle can be seen. It has been found in some cases that even if you are standing in a highly radioactive area, you need move only twenty feet to be in a comparatively safe place. In an area where the third rectangle has just faded from sight, one could remain about 3 hours before receiving a dangerous dose. However, a precautionary search should continue for an area registering only one rectangle.

It is important to be familiar with Civil Defense recommendations and to follow CD instructions..

For a better understanding of the nature and effects of radiation, a study of chapters VIII and XI of The Los Alamos Laboratory handbook, "The Effects of Nuclear Weapons" should be made. This booklet can be obtained from the U.S. Government Printing Office, Washington 25, D.C.

GARD: ITS OUTSTANDING FEATURES

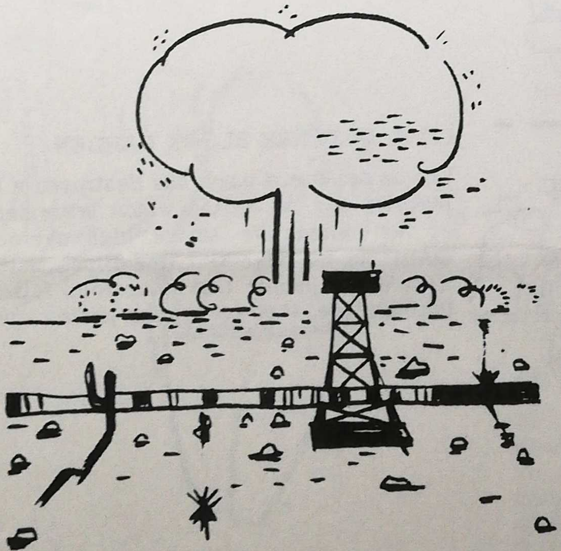


GARD, now being mass produced by one of the oldest electronic manufacturers in the United States, has come a long way since its inception. Utilizing newly-developed phosphorescent materials, crystals, and cycolac plastics, GARD has become the inexpensive gamma detector for every citizen.

Just take a look at its salient features and you'll agree that GARD measures up to all we've said about it:

- Unconditional guarantee
- It can be used repeatedly in a radiation field
- Weatherproof, fungusproof and shockproof
- No batteries, tubes or meters to wear out, burn out or replace
- Small size: 2" by 1¼" by 1"
- Light weight: 2 ounces
- No discharging, no need for recharging
- Inexpensive

GARD: ITS DESIGN AND DEVELOPMENT



GARD is a new, but thoroughly perfected instrument. It has been unofficially tested on the Nevada Proving Grounds and in the West Coast's leading scientific laboratories. Although the original patent was filed a number of years ago, continuous, exhaustive research has since brought GARD through many stages of development to its present form of usefulness for individuals everywhere.

An interesting article about GARD in its formative period, part of which we reprint here, appeared in THE REVIEW OF SCIENTIFIC INSTRUMENTS:

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Inexpensive Gamma Detector

DONALD R. CONE[*] AND DAVID W. GARBELLANO
Radiation Laboratory, Department of Physics, University of California, Berkeley, California

(Received July 17, 1953)

A simple and inexpensive radiation detection device has been constructed sensitive to gamma fluxes in the range from a few to a few hundred roentgen per hour. Thus one can distinguish between dangerous and relatively safe radiation levels such as one might expect from radiological warfare, low level atomic blasts, or from "rigged" hydrogen bomb explosions.

A typical device consists of two gamma-activated crystals in a light-tight container which can be held close to one eye to exclude external light. A radium-activated phosphorescent material is included for light intensity comparison purposes. The more sensitive crystal can be discerned in a gamma radiation of a few R/hr, and its light output matches that of the fluorescent material at levels of 20 to 30 R/hr. The light from the less sensitive crystal matches that of the phosphorescent material at about 100 R/hr.

INTRODUCTION

THE purpose of this investigation was to develop a device suitable for the qualitative analysis of radiation fields such as would result from atomic warfare. For optimum usefulness it should be small, simple, reliable, rugged, inexpensive, and contain no parts likely to break or wear out. The postwar deterioration of international relations and the development of atomic weapons by governments other than our own has unfortunately made the need for such an instrument both urgent and universal.

The device was designed to indicate the level of gamma radiation, to the exclusion of beta rays, although this is not a fundamental limitation of the system. The reason for this choice is that, "In considering the radioactivity of ··· fission products, the gamma radiation is of the greatest significance, since its penetrating power is very much larger than that of the beta particles"[1] and "The total energy of the beta particles produced in fission is ··· similar in magnitude to that of the gamma radiation. However, because the beta particles do not penetrate to such great distances as do the gamma rays, the energy of the former would, as a general rule, only be of significance in borderline cases."[2]

One of the first means of detecting radiation was the scintillation method, where particles incident on a zinc sulfide screen gave off visible light flashes. This principle of conversion of nonvisible radiation into visible light in a suitable material was selected as the most promising approach. A number of different materials were investigated and further studies made on the most promising.

GAMMA-ACTIVATED MATERIAL

The key to this approach to the problem of a simple inexpensive gamma detection device is the selection of the proper indicating material. Ideally, its properties should include the following:

. . Sensitivity to suitable levels of radiation.
B. Availability in sufficient quantities for widespread use.
C. Stability under normal extremes of temperature, moisture, and handling.
D. Inexpensiveness.

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[*] Now at the Chromatic Television Laboratories, Oakland, California.

[1] *The Effects of Atomic Weapons* (U. S. Government Printing Office, June, 1950), par. 8.10.

See reference 1, par. 8.13.

[3] Although it is realized that up to a point the light output from a crystal would increase as a function of volume, space and cost limitations prohibit fullest exploitation of this factor.

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PREPAREDNESS IS THE BEST INSURANCE AGAINST DISASTER

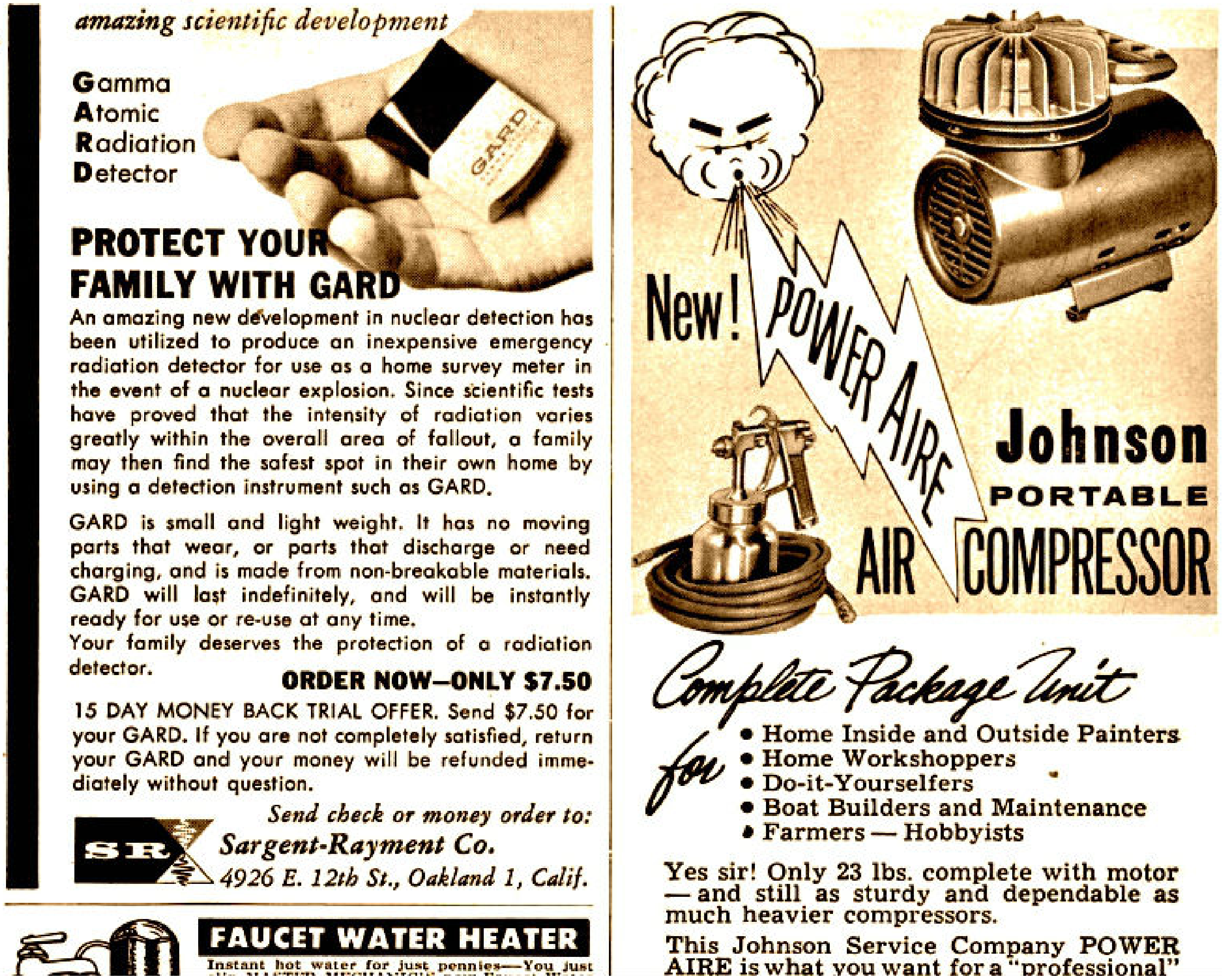
We sincerely hope that it will never be necessary for any of us to have to use GARD either because of atomic warfare or an accidental explosion during peacetime. Yet it would be foolish for us to deny the possibility of a nuclear disaster.

Most of us haven't any illusions about what is happening in the world today. The United States no longer has a monopoly over nuclear weapons. A nuclear arms race is on, and new hydrogen weapons with ever greater destructive force are being developed.

Since our ability to survive and rebuild after a nuclear attack is essential to the defense of our country, we believe that everyone of us should be fully informed and prepared in all phases of civil defense. The equally destructive aftermath of a nuclear bomb---exposure to insidious radioactivity and the resulting panic that might occur---can be avoided if every citizen knows the facts about the degree of radiation in his own area.

We would like you to think of GARD as an important tool to further our common goal of preparedness in an age of hope, but also one of great peril. Until enforceable measures to control the use of nuclear weapons are a reality, our lives and the welfare of our country may depend on the safety precautions we take now to insure survival in the event of a nuclear attack.

POPULAR SCIENCE SEPTEMBER 1957



amazing scientific development

Gamma
Atomic
Radiation
Detector

PROTECT YOUR FAMILY WITH GARD

An amazing new development in nuclear detection has been utilized to produce an inexpensive emergency radiation detector for use as a home survey meter in the event of a nuclear explosion. Since scientific tests have proved that the intensity of radiation varies greatly within the overall area of fallout, a family may then find the safest spot in their own home by using a detection instrument such as GARD.

GARD is small and light weight. It has no moving parts that wear, or parts that discharge or need charging, and is made from non-breakable materials. GARD will last indefinitely, and will be instantly ready for use or re-use at any time.

Your family deserves the protection of a radiation detector.

ORDER NOW—ONLY $7.50

15 DAY MONEY BACK TRIAL OFFER. Send $7.50 for your GARD. If you are not completely satisfied, return your GARD and your money will be refunded immediately without question.

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